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STUDIES OF SUPPRESSION OF EPILEPTIC SEIZURES WITH SEROTONIN-MODULATING ANTICONSOLIDATION PROTEIN (SMAP)

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Earlier studies revealed that tandem of brain amygdala complex and visual system is related directly to development of a number of the brain pathologies. In the present study the model of amygdala epilepsy in rabbits was formed and on its background the evoked activity in the visual cortex, colliculus superior (CS) and retina was analyzed. Tentative studies showed that penicillin-induced epileptic focus in the basolateral amygdala led to sharp (to 200-300%) enhancement of the evoked potentials (EP) in the cortex and retina, whereas in the CS the responses were suppressed significantly. During seizure fit of V-VI stage, according to Racine scale, in the visual cortex, CS and (that is especially interesting) in the retina the regular interictal spikes were fixed. Intramuscular administration (1 mg/kg) of SMAP, purified earlier from rat brain and being in linear relationship with serotonin, into rabbit led to suppression of seizures 30-40 min later. Administration of polyclonal anti-SMAP antibodies into amygdala (10 μ l; 1.5 mg/ml) originally induced clear interictal spikes in the visual cortex, CS and retina, while after 30 min inverse effect was observed: elimination of the initial positive component and strong enhancement of the negative phase in the visual cortex. The latter, probably, indicates to switching on compensatory SMAP synthesis after antibody-mediated SMAP inactivation. So, the results indicate to inhibitory activity of SMAP in cessation of epileptic seizures, while its downregulation may bring to seizure initiation.